ARC 5044C

ENVIRONMENTAL PROTECTION COMMISSION[567]

Notice of Intended Action

Proposing rule making related to aquatic life water quality criteria and providing an opportunity for public comment

The Environmental Protection Commission hereby proposes to amend Chapter 61, "Water Quality Standards," Iowa Administrative Code.

Legal Authority for Rule Making

This rule making is proposed under the authority provided in Iowa Code section 455B.173(2).

State or Federal Law Implemented

This rule making implements, in whole or in part, Iowa Code section 455B.173(2).

Purpose and Summary

The purpose of the proposed amendments is to update the current aquatic life water quality criteria with the latest scientific information on metal toxicity. Research has established dissolved metals (except for aluminum) more closely approximate the bioavailable fraction of metals in the water column rather than total recoverable metals (the current criteria). This new data indicates that the dissolved portion of metals in the water column is the portion that is most easily absorbed by aquatic life and is therefore a better measure of toxicity. Thus, measuring for total recoverable metals, in light of the new data, is an overly stringent approach. Because of this research, the Commission is proposing to convert the aquatic life water quality criteria from total recoverable metals to dissolved metals based on available conversion factors for the following metals: arsenic (III), cadmium, chromium (VI), lead, mercury, nickel, silver, and zinc. In addition, the aquatic life criteria for cadmium will be recalculated from the U.S. Environmental Protection Agency (EPA)-published 2016 national criteria for Iowa waters based on the resident aquatic species residing in Iowa waters.

Unlike other metals, some non-dissolved forms of aluminum can be toxic to aquatic life. As a result, the Commission is proposing aluminum aquatic life water quality criteria in the form of bioavailable concentration values, which include both dissolved and some non-dissolved (colloidal) aluminum which can be toxic to aquatic life. The proposed aluminum criteria also take into account new data which establish that aluminum bioavailability is dependent upon ambient levels of certain chemical parameters in the receiving stream, like pH, dissolved organic carbon, and hardness. These criteria were developed using the EPA's 2017 toxicity data and site-specific water chemistry data for Iowa waters. The criteria also provide wastewater permittees the option of collecting data specific to the permittee's own receiving stream. The Commission believes that the proposed aluminum criteria will provide greater flexibility to wastewater permittees while still protecting aquatic life.

Fiscal Impact

This proposed rule making has no fiscal impact to the state of Iowa but will have a positive fiscal impact on the private sector. Thirty facilities are currently subject to the existing aluminum criteria. Of these 30 facilities, 7 facilities have had aluminum permit limit violations, currently have a compliance schedule for aluminum, or will have a compliance schedule in their upcoming wastewater permit, and have enough data for evaluation. The Commission estimates that three of those seven facilities will be able to comply with the proposed aluminum criteria and will therefore be able to avoid the cost of installing aluminum removal technology. The Commission estimates this savings to be $42,503,000.

Currently, 81 facilities are subject to the rest of the metals criteria (arsenic (III), cadmium, chromium (VI), lead, mercury, nickel, silver, and zinc). The Commission estimates that 13 facilities will be able to

comply with the proposed dissolved metal criteria in this rule making and will therefore be able to avoid the cost of installing metals removal technology. The Commission estimates the savings to be between $42,746,700 and $52,763,000.

Therefore, the Commission estimates a total of 16 facilities may receive projected cost savings ranging from approximately $85 million to $95 million. A copy of the fiscal impact statement is available from the Department of Natural Resources (Department) upon request.

Jobs Impact

After analysis and review of this rule making, these proposed amendments are expected to have a positive impact on jobs. Overall, the proposed rule making will result in a savings ranging from $85 million to $95 million for wastewater dischargers across the state. The savings will be achieved by dischargers who will be able to avoid the installation of costly treatment technology because of their ability to protect aquatic life in a more reasonable manner. The potential costs associated with this proposed rule making are negligible.

The savings resulting from this rule making will have a positive impact on private sector jobs and employment opportunities in the state. Lower wastewater treatment costs at industrial facilities are expected to have a positive impact on jobs because industries can put the savings toward investment in their businesses, including new hiring. Similarly, businesses and industries that discharge to municipal wastewater treatment plants will benefit from lower utility rates if the municipal wastewater treatment plant can lower its operating costs as a result of this rule making. That savings on utility rates for businesses and industries can be put toward investment in their companies to create jobs.

A copy of the jobs impact statement is available from the Department upon request.

Waivers

Any person who believes that the application of the discretionary provisions of this rule making would result in hardship or injustice to that person may petition the Department for a waiver of the discretionary provisions, if any, pursuant to Chapter 561—10, as adopted by reference at 567—13.1(17A), to the extent such waiver is consistent with federal water quality standards requirements.

Public Comment

Any interested person may submit written comments concerning this proposed rule making. Written comments in response to this rule making must be received by the Department no later than 4:30 p.m. on June 23, 2020. Comments should be directed to:

Roger Bruner
Department of Natural Resources
Wallace State Office Building
502 East Ninth Street
Des Moines, Iowa 50319
Email: roger.bruner@dnr.iowa.gov

Public Hearing

A public hearing at which persons may present their views orally or in writing will be held via conference call as follows. Persons who wish to attend the conference call should contact Roger Bruner via email at roger.bruner@dnr.iowa.gov. A conference call number will be provided prior to the hearing. Persons who wish to make oral comments at the conference call public hearing must submit a request to Roger Bruner prior to the hearing to facilitate an orderly hearing.

June 23, 2020	Video/conference call
3 to 4 p.m.	Wallace State Office Building

Persons who wish to make oral comments at the public hearing will be asked to state their names for the record and to confine their remarks to the subject of this proposed rule making.

Any persons who intend to attend the hearing and have special requirements, such as those related to hearing or mobility impairments, should contact the Department and advise of specific needs.

Review by Administrative Rules Review Committee

The Administrative Rules Review Committee, a bipartisan legislative committee which oversees rule making by executive branch agencies, may, on its own motion or on written request by any individual or group, review this rule making at its regular monthly meeting or at a special meeting. The Committee's meetings are open to the public, and interested persons may be heard as provided in Iowa Code section 17A.8(6).

The following rule-making actions are proposed:

ITEM 1. Amend subrule **61.3(3)**, TABLE 1, Criteria for Chemical Constituents, parameters for aluminum, arsenic (III), cadmium, chromium (VI), lead, mercury (II), nickel, silver, and zinc, as follows:

Aluminum	Chronic(r)	~~87~~ 890(o)	—	~~87~~ 890(o)	~~87~~ 890(o)	~~87~~ 890(o)	~~748~~ 890(o)	—	—
	Acute(r)	~~1106~~ 2,500(o)	—	~~750~~ 2,500(o)	~~750~~ 2,500(o)	~~750~~ 2,500(o)	~~983~~ 2,500(o)	—	—
Arsenic (III)	Chronic(p)	~~200~~ 150	—	150	150	150	~~200~~ 150	—	—
	Acute(p)	~~360~~ 340	—	340	340	340	~~360~~ 340	—	—
	Human Health — Fish	—	—	—	—	—	—	—	50(e)(g)
	Human Health — F & W	—	—	—	—	—	—	—	.18(f)(g)
Cadmium	Chronic(p)	~~1~~ 1.2(h)	—	~~.45~~ 1.2(h)	~~.45~~ 1.2(h)	~~.45~~ 1.2(h)	~~1~~ 1.2(h)	—	—
	Acute(p)	~~4~~ 3.4(h)	—	~~4.32~~ 5.35(h)	~~4.32~~ 12.5(h)	~~4.32~~ 12.5(h)	~~4~~ 5.35(h)	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	168(e)
	MCL	—	—	—	—	—	—	5	—
Chromium (VI)	Chronic(p)	~~40~~ 11	—	11	11	11	~~10~~ 11	—	—
	Acute(p)	~~60~~ 16	—	16	16	16	~~15~~ 16	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	3365(e)
	MCL	—	—	—	—	—	—	100	—
Lead	Chronic(p)	~~3~~ 5.3(j)	—	~~7.7~~ 5.3(j)	~~7.7~~ 5.3(j)	~~7.7~~ 5.3(j)	~~3~~ 5.3(j)	—	—
	Acute(p)	~~80~~ 136(j)	—	~~197~~ 136(j)	~~197~~ 136(j)	~~197~~ 136(j)	~~80~~ 136(j)	—	—
	MCL	—	—	—	—	—	—	50	—
Mercury (II)	Chronic(p)	~~3.5~~ 0.77	—	~~.9~~ 0.77	~~.9~~ 0.77	~~.9~~ 0.77	~~.91~~ 0.77	—	—
	Acute(p)	~~6.5~~ 1.4	—	~~1.64~~ 1.4	~~1.64~~ 1.4	~~1.64~~ 1.4	~~1.7~~ 1.4	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	.15(e)
	Human Health + — F & W	—	—	—	—	—	—	—	.05(f)
Nickel	Chronic(p)	~~350~~ 93(k)	—	93(k)	93(k)	93(k)	~~150~~ 93(k)	—	—
	Acute(p)	~~3250~~ 840(k)	—	~~843~~ 840(k)	~~843~~ 840(k)	~~843~~ 840(k)	~~1400~~ 840(k)	—	—

	Human Health + — Fish	—	—	—	—	—	—	—	4600(e)
	Human Health + — F & W	—	—	—	—	—	—	—	610(f)
Silver	Chronic(p)	N/A	—	N/A	N/A	N/A	N/A	—	—
	Acute(p)	~~30~~ 11	—	~~3.8~~ 11	~~3.8~~ 11	~~3.8~~ 11	4 11	—	—
	MCL	—	—	—	—	—	—	50	—
Zinc	Chronic(p)	~~200~~ 210(l)	—	~~215~~ 210(l)	~~215~~ 210(l)	~~215~~ 210(l)	~~100~~ 210(l)	—	—
	Acute(p)	~~220~~ 210(l)	—	~~215~~ 210(l)	~~215~~ 210(l)	~~215~~ 210(l)	~~110~~ 210(l)	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	26*(e)
	Human Health + — F & W	—	—	—	—	—	—	—	7.4*(f)

ITEM 2. Amend subrule **61.3(3)**, TABLE 1, footnotes (h), (j), (k), and (l), as follows:

(h) ~~Class B(WW-1), B(WW-2), and B(WW-3)~~ The acute and chronic criteria listed in main table are based on a hardness of 200 mg/l (as $CaCO_3$ (mg/l)). Numerical criteria (µg/l) for cadmium are a function of hardness (as $CaCO_3$ (mg/l)) using the ~~equation for each use according to the~~ following ~~table~~ equations:

	~~B(WW-1)~~ B(CW1)	~~B(WW-2)~~ B(WW-1)&B(LW)	~~B(WW-3)~~ B(WW-2)&B(WW-3)
Acute	$e^{[1.0166Ln(Hardness) - 3.924]}$ $\frac{(1.136672 - [(\ln hardness) \times (0.041838)])^*}{e^{(0.9789 \times \ln(hardness) - 3.866)}}$	$e^{[1.0166Ln(Hardness) - 3.924]}$ $\frac{(1.136672 - [(\ln hardness) \times (0.041838)])^*}{e^{(0.9789 \times \ln(hardness) - 3.4210)}}$	$e^{[1.0166Ln(Hardness) - 3.924]}$ $\frac{(1.136672 - [(\ln hardness) \times (0.041838)])^*}{e^{(0.9789 \times \ln(hardness) - 2.5750)}}$
Chronic	$e^{[0.7409Ln(Hardness) - 4.719]}$ $\frac{(1.101672 - [(\ln hardness) \times (0.041838)])^*}{e^{0.7977 \times \ln(hardness) - 3.909)}}$	$e^{[0.7409Ln(Hardness) - 4.719]}$ $\frac{(1.101672 - [(\ln hardness) \times (0.041838)])^*}{e^{0.7977 \times \ln(hardness) - 3.909)}}$	$e^{[0.7409Ln(Hardness) - 4.719]}$ $\frac{(1.101672 - [(\ln hardness) \times (0.041838)])^*}{e^{0.7977 \times \ln(hardness) - 3.909)}}$

(j) ~~Class B(WW-1), B(WW-2), and B(WW-3)~~ The acute and chronic criteria listed in main table are based on a hardness of 200 mg/l (as $CaCO_3$ (mg/l)). Numerical criteria (µg/l) for lead are a function of hardness ($CaCO_3$ (mg/l)) using the ~~equation for each use according to the~~ following ~~table~~ equations:

	~~B(WW-1)~~	~~B(WW-2)~~	~~B(WW-3)~~
Acute	$\frac{(1.46203-[(\ln hardness)(0.145712)])}{e^{[1.2731Ln(Hardness) - 1.46]}} \times$	$e^{[1.2731Ln(Hardness) - 1.46]}$	$e^{[1.2731Ln(Hardness) - 1.46]}$
Chronic	$\frac{(1.46203-[(\ln hardness)(0.145712)])}{e^{[1.2731Ln(Hardness) - 4.705]}} \times$	$e^{[1.2731Ln(Hardness) - 4.705]}$	$e^{[1.2731Ln(Hardness) - 4.705]}$

(k) ~~Class B(WW-1), B(WW-2), and B(WW-3)~~ The acute and chronic criteria listed in main table are based on a hardness of 200 mg/l (as $CaCO_3$ (mg/l)). Numerical criteria (µg/l) for nickel are a function of hardness ($CaCO_3$ (mg/l)) using the ~~equation for each use according to the~~ following ~~table~~ equations:

	~~B(WW-1)~~	~~B(WW-2)~~	~~B(WW-3)~~
Acute	$0.998 \times e^{[0.846Ln(Hardness) + 2.255]}$	$e^{[0.846Ln(Hardness) + 2.255]}$	$e^{[0.846Ln(Hardness) + 2.255]}$
Chronic	$0.997 \times e^{[0.846Ln(Hardness) + 0.0584]}$	$e^{[0.846Ln(Hardness) + 0.0584]}$	$e^{[0.846Ln(Hardness) + 0.0584]}$

(l) ~~Class B(WW-1), B(WW-2), and B(WW-3)~~ The acute and chronic criteria listed in main table are based on a hardness of 200 mg/l (as $CaCO_3$ (mg/l)). Numerical criteria (µg/l) for zinc are a function of hardness ($CaCO_3$ (mg/l)) using the ~~equation for each use according to the~~ following ~~table~~ equations:

	~~B(WW-1)~~	~~B(WW-2)~~	~~B(WW-3)~~
Acute	$0.978 \times e^{[0.8473Ln(Hardness) + 0.884]}$	$e^{[0.8473Ln(Hardness) + 0.884]}$	$e^{[0.8473Ln(Hardness) + 0.884]}$
Chronic	$0.986 \times e^{[0.8473Ln(Hardness) + 0.884]}$	$e^{[0.8473Ln(Hardness) + 0.884]}$	$e^{[0.8473Ln(Hardness) + 0.884]}$

ITEM 3. Adopt the following **new** footnotes (o), (p), (q), and (r) in subrule **61.3(3)**, TABLE 1, Criteria for Chemical Constituents:

(o) The acute and chronic criteria listed in Table 1 are calculated using Aluminum Criteria Calculator V2.0 (Excel) as described in "Final Aquatic Life Ambient Water Quality Criteria for Aluminum 2018 (EPA-822-R-18-001), December 2018." The criteria were calculated using the lowest 10th percentile of individual model outputs using spatially and temporally representative model inputs from across the state.

(p) The criteria are expressed as dissolved concentration.

(q) The silver criteria listed in Table 1 are based on a hardness of 200 mg/l (as $CaCO_3$ (mg/l)). Numerical criteria (µg/l) for silver are a function of hardness ($CaCO_3$ (mg/l)) using the following equation:
Acute $0.85 \times e^{[1.72Ln(Hardness)-6.59]}$

(r) The criteria are expressed as the bioavailable fraction.